A LONGITUDINAL STUDY OF THE RELATIONSHIPS BETWEEN FOUR DIFFERENTIALLY MOTIVATED FORMS OF EMPLOYEE SILENCE AND BURNOUT

Michael Knoll[1]

Rosalie J. Hall[2]

Oliver Weigelt[3]

[1]Chemnitz University of Technology

[2]Durham University Business School

[3]University of Rostock

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ABSTRACT

Although previous research has established that employee silence can weaken organizational performance and development, less is known about potential detrimental effects of silence on individual employees, who may believe that they have plausible reasons for remaining silent. We propose negative effects of silence on employee well-being, focusing on relationships of four differentially motivated forms of silence (i.e., acquiescent, quiescent, prosocial, and opportunistic) with three components of employee burnout (depersonalization, emotional exhaustion, and perceptions of reduced personal accomplishment). In addition, we present arguments for reciprocal effects of burnout on silence. Using data collected from over 600 working adults in a four-wave longitudinal study, we examine both: (a) the effects of silence on burnout, and (b) the effects of burnout on silence using an auto-regressive cross-lagged panel design in a structural equation modeling context. This design controls for effects of prior measurement periods, includes reverse causal relationships, and provides an assessment of stability/change over time. Prior levels of the two imposed forms of silence (i.e., acquiescent and quiescent) had significant effects on the later values of depersonalization and emotional exhaustion, but not on reduced personal accomplishment. In contrast, the more voluntary forms of silence (i.e., prosocial and opportunistic) did not show any significant effects on burnout. We also found consistent evidence that levels of the three burnout dimensions at a prior time related to all four silence types at the subsequent time, with the exception of non-significant emotional exhaustion effects on opportunistic silence.

A longitudinal study of the relationships between four differentially motivated forms of employee silence and burnout

At work, people encounter situations in which they have ideas for improvement, or experience concerns, diverging viewpoints, or questions. These situations might involve critical issues such as noticing unethical behavior, or rather ordinary issues such as perceiving that a manager's meetings are lengthy. When employees express their views, chances are that the situation improves. Employee voice thus often contributes to the learning and development of the group or organization and can prevent internal and external stakeholders from harm (Bashshur & Oc, 2015; Hirschman, 1970; Milliken, Schipani, Bishara, & Prado, 2015). Regardless of the demonstrated value to the organization of speaking out, at times employees may prefer to remain silent despite disagreeing with current organizational circumstances or supervisor or co-worker behavior (Morrison & Milliken, 2000).

Motivations for remaining silent are diverse. For example, employees may believe that voice is dangerous, or that speaking out is futile (Milliken, Morrison, & Hewlin, 2003; Pinder & Harlos, 2001). These beliefs have some validity given what we know about potential negative outcomes of whistleblowing and from managerial responses to voice (Burris, 2012; Cortina & Magley, 2003; Near & Miceli, 1996). Employees may also remain silent to avoid embarrassing or causing trouble for others or for the organization (Umphress & Bingham, 2011; van Dyne, Ang, & Botero, 2003). Finally, silence may serve opportunistic goals such as to avoid a heavier workload or to protect a knowledge advantage (Connelly, Zweig, Webster, & Trougakos, 2012; Knoll & van Dick, 2013).

Silence behaviors arising from each of these motives can appear to the employee to have benefits, and indeed, managers also may appreciate silence when it avoids disturbing work processes (Burris, 2012; Haskins & Freeman, 2015). However, psychologists have long argued

that it takes a psychological toll to actively inhibit the expression of one's thoughts, emotions, and behaviors, and that efforts to inhibit or suppress responses can accumulate over time, resulting in physiological and psychological symptoms (e.g., Gross & Levenson, 1997; Harter, 1997; Larsen & Chastain, 1990; Uysal, Lin, & Knee, 2010; Pennebaker, 1989; Winnicot, 1960). So far, organizational research has focused predominantly on the effects that voice and silence may have on organizational performance (e.g., the recent meta-analysis by Bashshur & Oc, 2015), but very little research has been conducted on the effects of silence on individual employee health and well-being. Even those few studies, although suggestive that silence may relate to the health and well-being of individual employees (e.g., Knoll & van Dick, 2013; Whiteside & Barclay, 2013), have been cross-sectional and thus are very limited in the extent to which they allow conclusions about causality.

Indeed, cross-sectional designs can only give a limited picture of the potentially complex relationships of silence with health and well-being. As described in greater detail shortly, the few available studies that focus on work contexts, and the more exhaustive findings from neighbouring disciplines, suggest that silence is associated with lower levels of health and well-being. Based on these, we expect that at least some forms of silence will have a negative effect on health and well-being. However, the causal relationship may plausibly be in the opposite direction as well. For example, indicators of lower levels of employee health and well-being, such as fatigue and detachment, are associated with employee withdrawal behaviors (Hobfoll, 1989; Lee & Ashforth, 1990). Silence itself is a form of withdrawal; thus, we anticipate that poor health or low levels of well-being might in turn contribute to silence by affecting one's desire or ability to voice concerns. To investigate these potentially reciprocal relationships of silence and health/well-being requires a research design that allows disentangling the effects of silence on

health/well-being from those of health/well-being on silence.

We address these issues in the current study. A first aim of the study is to employ a longitudinal research design to examine whether silence negatively affects employee burnout – an important well-being outcome in its own right, and potentially a precursor to health problems such as cardiovascular disease (Melamed, Shirom, Toker, Berliner, & Shapira, 2006). Burnout is defined as a prolonged response to chronic work-related stressors that manifests in three primary symptoms of exhaustion, depersonalization, and perceptions of reduced personal accomplishment (Maslach & Jackson, 1981). Potentially different patterns of relationships of these three symptoms with the differentially motivated types of employee silence may provide clues to the psychological processes that are responsible for the assumed silence→health link, and thus aid in theory development. In addition, showing that silence relates to burnout could have practical relevance as burnout compromises an employee's broader well-being (e.g., with links to depression, Hakanen, Schaufeli, & Ahola, 2008) and job performance (Bakker, van Emmerick, & van Riet, 2008; Taris, 2006), and can be contagious, with spill-over effects both to colleagues and to home life (Hakanen & Schaufeli, 2012; Maslach, Schaufeli, & Leiter, 2001).

Examining the potential for reciprocal effects of burnout on silence is the second aim of our study. We expect that employees suffering from burnout may exert fewer efforts to voice their concerns, even though doing so in some cases might alleviate sources of stress that contribute to the burnout itself. Indeed, there is considerable empirical evidence of reciprocal relationships in the form of "loss spirals" (i.e., job demands create strain, which in turn results in higher levels of perceived and actual demands, leading to still higher levels of strain) in the related Job Demands-Resources Theory literature (see review by Bakker & Demerouti, 2017). Although our study is not designed to allow us to specifically test for spiral patterns, nor to

determine the starting point for silence-burnout-silence dynamics, demonstrating patterns of relationships that are potentially consistent with such spirals could be valuable in advancing our theory in this area. In addition, showing effects of burnout on silence could help explain other findings in the literature. For example, if burnout indeed influences silence, it might partially explain the negative effects of burnout on performance (Bakker, Demerouti, & Verbeke, 2004). Also, which specific burnout dimensions are found to causally relate to silence may provide some clues to the psychological processes involved, which could include exhaustion and lack of energy, social withdrawal and lack of caring, or low motivation due to feelings of futility and personal ineffectiveness.

Our third aim is exploring whether silence-burnout relationships differ depending on employees' specific silence motives. This should not only further specify the relationship of silence with health and well-being; it could also enrich our understanding of the employee silence construct. Conceptual papers (Pinder & Harlos, 2001; van Dyne et al., 2003) and exploratory studies (Milliken et al., 2003) have suggested varied motives for silence, but corresponding multi-dimensional measures have been developed and validated only recently (Brinsfield, 2013; Knoll & van Dick, 2013). As it seems plausible that silence may have differing antecedents and effects depending on why employees withhold their views, in the current study, we explore whether the motive upon which silence is based (i.e., fear, resignation, prosociality, or opportunism) influences the extent it relates to burnout.

In the next section, we further develop a rationale and research hypotheses regarding the potentially reciprocal relationship between employee silence and health. Following that, we describe our sample and the data collection procedures for a study using a four-wave panel design to test our hypotheses. Figure 1 depicts the general form of relationships expected,

namely, that over time prior levels of silence affect subsequent levels of burnout, and vice versa.

Insert Figure 1 about here

Development of Theoretical Arguments for Silence-Burnout Relationships

Definition and forms of employee silence

Employees' reluctance to express what is on their minds at work - with its potential negative effects for organizational performance and for both internal and external stakeholders - has been addressed by researchers across multiple domains of organizational research, including organizational and team learning (Argyris & Schon, 1978; Edmondson, 1999), group decision making (Janis, 1972; Strasser & Titus, 1985), mistreatment and unethical behavior (Pinder & Harlos, 2001), and industrial relations (Donaghey, Cullinane, Dundon, & Wilkinson, 2011), and is mentioned in the experience-based management literature (e.g., Welch, 2005). However, it has taken awhile for organizational researchers to bring together previously scattered theoretical and atheoretical approaches to the withholding of information and underreporting of wrongdoing in organizations (see reviews by Greenberg & Edwards, 2009; Knoll, Wegge, Unterrainer, Silva, & Jønsson, 2016; Morrison, 2014). Today, the concept of employee silence functions as an umbrella term for "the withholding of any form of genuine expression about the individual's behavioral, cognitive, and/or affective evaluations of his or her circumstances to persons who are perceived to be capable of effecting change or redress" (Pinder & Harlos, 2001, p.334).

One of the central arguments for treating silence as a distinct concept (and not merely as the absence of voice) is that it has many facets depending upon the motives employees have for withholding their views (e.g., Milliken et al., 2003; Pinder & Harlos, 2001; van Dyne et al., 2003). Fear and resignation were the focus of early explanations of silence in organizations (e.g.,

Morrison & Milliken, 2000). For example, Pinder and Harlos' (2001) study of silence following experiences of mistreatment and injustice distinguished between quiescent and acquiescent silence. *Quiescent silence* denotes a state in which employees think it is too dangerous to speak up, or that the situation does not allow them to express their views. *Acquiescent silence* denotes a state in which employees remain silent because they have given up hope that change is possible. Quiescent silence is characterized by high arousal, thus links to the broader literature on fear at work (Kish-Gephart, Detert, Trevino, & Edmondson, 2009). In contrast, acquiescent silence shares characteristics with the state of learned helplessness (Seligman, 1972) in that employees resign themselves to the situation, do not actively search for opportunities to change the *status quo*, and may not even notice when such opportunities occur.

Additional forms of silence behaviors have been more recently described. These involve using silence in the pursuit of a desired personal or social goal, rather than to avoid an undesired outcome (Kurzon, 1992). For example, *opportunistic silence* (Knoll & van Dick, 2013) includes withholding information to maintain a knowledge advantage or remaining silent to avoid additional workload – behavior that has been discussed in the context of knowledge hiding and as counterproductive work behavior (Connelly et al., 2012). Besides self-interest, employees may also withhold information cooperatively or altruistically to protect or benefit their colleagues, supervisors or organization. Such *prosocial silence* (van Dyne et al., 2003) can have positive effects on internal organizational social processes, but may conceal inefficacy or may harm external stakeholders who are not informed about potential product deficiencies or unethical organizational behaviors (Umphress & Bingham, 2011; Wang, Hsieh, Tsai, & Cheng, 2011). And, by creating a norm for silence, prosocial silence may eventually facilitate an organizational climate where speaking up becomes difficult for everyone (Janis, 1972; Noelle-

Neumann, 1974).

Although a number of other motives for employee silence have been identified (e.g., disengagement, revenge, shame; Bies, 2009; Brinsfield, 2013), the four motives of fear, resignation, opportunistic, and prosocial silence are the most established. Consequently, we focus on these four types in the current study. When comparing across these four constructs, we note that acquiescent and quiescent silence involve higher levels of avoidance motivation than do prosocial and opportunistic silence. In contrast, prosocial and opportunistic silence have a less coerced quality to them, and engaging in them may be more likely to be interpreted as an opportunity rather than a threat. If we think of silence situations as imposing job demands, acquiescent and quiescent silence impose more (largely negative) emotional demands, compared to the greater cognitive demands imposed by prosocial and opportunistic silence (Kirrane, O'Shea, Buckley, Grazi, & Prout, 2017). Distinctions such as these could potentially influence relationships of the four silence types with employee burnout (e.g., Livne & Rashkovits, 2018), thus speaking to the importance of an initial investigation of whether such differences exist.

Burnout

The three components of burnout (Maslach & Jackson, 1981) allow for a rich investigation of potential processes responsible for relationships of silence with health and well-being. The burnout component of *emotional exhaustion* denotes a state in which employees feel that "they lack adaptive resources and cannot give any more in their job" (Halbesleben & Buckley, 2004, p. 859). Linking silence to exhaustion allows us to examine whether silence leads to (or is caused by) fatigue and low energy. The burnout component of *depersonalization* describes a process whereby employees "detach from their job and begin to develop callous or uncaring attitudes toward their job, their performance, and those associated with the job (e.g.,

clients, co-workers, etc.)" (p. 860). Linking silence to depersonalization allows us to examine its role as a predictor and potential consequence of employees' relationship to their work (i.e., whether they are engaged or alienated) and social relationships at work (e.g., colleagues, customers, patients). The burnout component of *reduced personal accomplishment* allows us to link silence to issues of confidence and self-efficacy at work. When employees experience this component, they perceive that "they cannot perform as well at their job as they once could" (p. 860). We will examine whether silence and employees' perceptions of accomplishment are reciprocally related, and if so, whether silence motive plays a role.

We examine both whether silence affects burnout, and whether burnout affects silence. In doing so, we develop specific hypotheses for each of the three burnout components based on theoretical considerations. However, because of the nascent state of knowledge (Edmondson & McManus, 2007) on differentially motivated silence behaviors, for most hypotheses we refrained from developing specific hypotheses about specific types, and instead, proposed broader hypotheses referencing silence in general. We do, however, report analysis results separately for each of the four silence motives and we elaborate on the potential theoretical implications of differences across motives in the discussion section.

Employee silence as a predictor of burnout

Employee silence→emotional exhaustion. According to self-regulation theory (e.g., Bandura, 1991; Carver & Scheier, 1998), human beings can override their initial responses in order to bring their own thoughts, feelings and behavior into line with goals or standards. Such self-regulation imposes a demand on attentional and emotional resources, and when it is prolonged, results in a strain. For example, research on emotional labour (Grandey, 2000; Hochschild, 1983) has shown that emotional self-regulation to meet work demands, especially

when frequent or on-going, may result in burnout (see also Gross & Levenson, 1997; Huelsheger & Schewe, 2011). The contribution of intensive self-regulation to burnout has been attributed to a depletion of self-regulatory resources, because when people control their expressions limited self-regulatory resources are consumed, potentially leading to ego-depletion (Baumeister & Vohs, 2007). In the state of ego-depletion, the self is temporarily less able and less willing to function normally, which, when further demands have to be satisfied, may result in exhaustion.

Employee silence behavior often similarly involves high levels of emotional and cognitive self-regulation, as the employee must suppress responses to a troubling situation. In addition to the self-regulatory resources that are consumed in specific episodes in which opinions and concerns are withheld, employee silence may even linger as a low-level stressor if employees continue to ruminate about situations in which they did not express their views (Festinger, 1957; Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008). Such ruminations also bind cognitive resources, either because engaging in them robs resources from other tasks, or because suppressing them also requires resources (Wegner, 1992). Furthermore, when rumination continues outside of work, the inability to detach may impede the recovery effects that otherwise are associated with leisure time (Sonnentag & Bayer, 2005). Due to the cumulative effects of self-regulatory expenditures during silence episodes and later ruminations about those episodes, we expect:

Hypothesis 1: Silence behaviors at a prior point in time positively predict emotional exhaustion at a subsequent point in time.

Employee silence→depersonalization. We suggest two processes through which silence might lead to depersonalization. If employees perceive that contributing their ideas and opinions makes a difference and that they are valued as persons, they are likely to connect and engage

with their work, their colleagues, and their organization (Kahn, 1990; Kassing, 2000). If, in contrast, employees feel they need to withhold certain opinions and cannot express what they think and feel, these employees are likely to withdraw psychologically from the situation and their co-workers, and to work at a cynical distance (Collinson, 1994; Fleming & Spicer, 2003), that is, in a state of depersonalization.

Remaining silent may negatively affect relationships at work in another way. Employees who withhold information that they do not want to be discovered probably need to more closely monitor their own and others' behavior. This monitoring consumes cognitive resources that could otherwise be devoted to improving social relationships. Over time, a reduced investment of efforts into employee interactions is likely to result in lower quality relationships and a mutual lack of interest, again increasing depersonalization. Supporting the idea of a silence-depersonalization link is a study by Newheiser and Barreto (2014), who found interaction partners and observers estimate interactions as less favourable, and interaction partners as less positive, when the latter actively withhold information about themselves. Consequently, we expect:

Hypothesis 2: Silence behaviors at a prior point in time positively predict depersonalization at a later point in time.

Employee silence→perceptions of reduced personal accomplishment. We believe that the processes of rumination, self- and other monitoring, and self-regulation that accompany employee silence will consume cognitive resources and energy that might have been better used for task completion, eventually reducing feelings of personal accomplishment. And, feelings of personal accomplishment may depend not only on the quality of one's own performance, but, especially in team environments, also on the quality of collective decision making and learning,

which could suffer from the detrimental effects that silence can have on information exchange and knowledge use (Černe, Nerstad, Dysvik, & Skerlavaj, 2014; Janis, 1972; Stasser & Titus, 1985). Furthermore, if employees do not contribute their ideas for improvement, or if they refrain from speaking up about adverse work conditions such as inefficient structures and procedures or incompetent colleagues or supervisors, those conditions are more likely to endure, with potential negative effects on both individual and group effectiveness (Bashshur & Oc, 2015; Morrison & Milliken, 2000). Consequently, we expect:

Hypothesis 3: Silence behaviors at a prior point in time positively predict perceptions of reduced personal accomplishment at a later point in time.

Burnout as a predictor of employee silence

Examining how the three burnout dimensions might affect silence is a second aim of the current study. Indeed, employee health and well-being have received increased interest in the organizational and management literature, overcoming a prior stigmatization as secondary to performance aims (Beehr & Newman, 1978). Organizations have many reasons to invest in employee well-being and health. Besides health-related productivity losses (e.g., Loeppke, Taitel, Haufle, Parry, Kessler, & Jinnett, 2009), current trends towards tight staffing leave organizations vulnerable to sick leave, and the increasing competition for qualified personnel raises the need to make workplaces more attractive to potential hires by maintaining healthy work settings. Although the question of whether happy workers are more productive is disputable (but see Judge, Bono, Thoresen, & Patton's 2001 meta-analysis), impaired psychological and physical health *is* linked to negative outcomes (Ford, Cerasoli, Higgins, & Decesare, 2011). Indeed, burnout specifically has been shown to reduce performance or antecedents of performance, particularly extra-role behaviors (Cropanzano, Rupp, & Byrne, 2003). Employees' contributions

of ideas and concerns can be important for individual and collective performance. Demonstrating that burnout can influence silence would suggest a behavioral process that could at least partially explain how burnout can lower performance.

Emotional exhaustion→silence. Voicing concerns and contributing innovative ideas demand employee effort at the moment they engage in voice, and often, additional demands will follow, such as having further discussions, and generating and implementing solutions to the voiced problems (Bolino & Turnley, 2005). Indeed, proactive voice behaviors can be expected to potentially result not only in positive effects on well-being via motivational pathways, but also negative outcomes via a resource-depletion pathway (Cangiano & Parker, 2015). Such additional engagement may be unappealing to exhausted employees as "*emotional exhaustion* may prompt the avoidance of action (…) and changes as a means of stanching the loss of energy" (Ashforth & Lee, 1990). The Conservation of Resources theory (Hobfoll, 1989) implies that employees who have already experienced a loss of resources due to burnout should tend to avoid the risk of losing yet more resources (which could happen when engaging in voice), and instead would be likely to engage in some form of withdrawal (Wright & Cropanzano, 1998). According to this reasoning, we expect:

Hypothesis 4: Emotional exhaustion at a prior time positively predicts silence behaviors at a subsequent time.

Depersonalization→silence. Social identity theory and self-determination theory suggest that if employees experience an overlap of their selves with their organization or their work, their motivation to go the extra mile is higher (Deci & Ryan, 2000; van Dick, Grojean, Christ, & Wieseke, 2006). If employees, in contrast, experience themselves as alienated from other people, their work task and/or their organization – as it is the case in the state of depersonalization – they

refrain from engaging in extra-role behavior (Bakker et al., 2004), and may not feel obliged to voice ideas or concerns. This assumption is supported by Burris, Detert, and Chiaburu (2008), who showed a negative relationship between psychological detachment and voice, and by Knoll and Redman (2016), who found a negative correlation between engagement and silence. The state of depersonalization may have an even stronger effect than detachment or a lack of engagement. Because employees in the state of depersonalization lack interest in issues that require working cooperatively with others, and may try to minimize their interactions with others, they are likely to prefer silence to voice. This effect, however, should not occur for prosocially motivated silence, as greater depersonalization is unlikely to increase employees' motivation to engage in behaviors that benefit others (Kirrane et al., 2017). Thus, we expect:

Hypothesis 5: Depersonalization at a prior time positively predicts quiescent, acquiescent, and opportunistic silence at a subsequent time.

Reduced personal accomplishment→ silence. Challenging the status quo by addressing critical issues and proposing change requires a certain level of self-confidence. Indeed, a recent meta-analysis reported a positive relationship between core self-evaluations, a broad appraisal of one's self-worth and efficacy (Judge, Erez, Bono, & Thoresen, 2003), and voice (Chamberlin, Newton, & LePine, 2017). Employees who experience *reduced personal accomplishment* might not feel competent enough to speak up or to implement change, and thus remain silent. They may also be more likely to fear negative consequences following speaking up, because they may think that lower performers are more likely to become subjects of retaliation and have fewer alternatives when negative consequences manifest. Finally, perceiving oneself as less capable may increase the value of social relationships or make one less willing to risk disturbing relationships (Heaphy & Dutton, 2008; Hobfoll, 1989) which, in turn, may influence the

tendency to engage in prosocial silence. Consequently, we expect:

Hypothesis 6: Prior levels of perceived reduction in personal accomplishment positively predict employee silence behaviors at a subsequent time.

METHOD

Sample and Data Collection Procedure

The hypotheses are tested with data from a heterogeneous sample of working adults who submitted responses to online surveys at approximately six-week intervals (employees were given up to three days to respond after receiving an email at each measuring point), for a total of four waves of data collection. Over the full data collection period, a total of 680 persons responded to at least one wave of data collection, with initial sample sizes of N = 636, 439, 347, and 202 for Times 1-4, respectively. However, 51 of these respondents were dropped in the analyses due to extensive missing data and/or careless responding, and certain patterns of missing data meant some additional persons were dropped from specific analyses, yielding useable N's of 619 to 629 for the focal structural equation modelling analyses.

Participants were employees enrolled in a distance education psychology program at a German university (MBA equivalent) who voluntarily took part in partial fulfilment of course requirements. They had a mean age of 34.5 years (SD = 8.3; *Range* = 21 to 64), and 76% were female. Twenty-six per cent of the employees worked in small organizations of up to 20 employees, 40% worked in middle-size organizations of 21-500 employees, 23% worked in bigger organizations of 501-10,000 employees, and 11% worked in large organizations of more than 10,000 employees. Seventy-three per cent held entry-level positions, 16% were lower management, and 10% were at middle or higher levels of management. Different sectors were represented in the sample, including social and health care (23%), education (13%), industry

(11%), trade and distribution (9%) administration (9%), and other services (15%). Forty per cent of the participants reported working part-time.

Measurement

The online survey included the measures described in the current article, as well as additional measures related to respondent demographics and descriptors of the organization and the work context. Given the internal, subjective nature of burnout and the fact that it is extremely difficult for others to detect whether one is remaining silent on a particular topic, self-report measures seemed an appropriate measurement method. Unless noted otherwise, participants responded to all survey items on five-point Likert-type scales with response anchors ranging from 1 ("does not apply to me at all") to 5 ("does apply to me entirely"). Scale scores were created by computing the mean across the items. All items were in German.

Employee silence associated with four different motivations was measured with Knoll and van Dick's (2013) 12-item scale, which was originally developed in German. At each of the four measurement occasions, instructions and three preliminary questions were asked to gauge whether and to what extent employees had encountered a problematic situation at work, and the extent to which they then voiced concerns or remained silent. Specifically, respondents first read the following short paragraph:

> From time to time, employees face problematic situations at work. For example, they think that colleagues or supervisors act in a wrong, inefficient, immoral or otherwise problematic way. People deal differently with such situations, that is, some voice their concerns and try to change the situation, whereas others remain silent. We are interested in whether you noticed such a problematic situation at work and whether you spoke up to someone who can change the situation or tended to remain silent.

Participants indicated whether they had noticed such a situation, either during the last six months (first measurement occasion) or over the last six weeks (all other measurement occasions), using a response scale with four categories ranging from "No, never" to "Yes, many

times." They were then asked to indicate how often did they "address concerns or your deviating opinion to someone who is able to change the situation?" and how often they "preferred to remain silent?" Responses to these questions were made using a response scale with four categories ranging from "Never" to "Always." Next, the item stem ("I remained silent at work…") was presented, followed by three items for each of the *four forms of employee silence*. Sample items are "…because I feared disadvantages from speaking up" (quiescent silence); "…because nothing would have changed, anyway" (acquiescent silence); "…because I did not want to embarrass others" (prosocial silence); "…to avoid giving away my knowledge advantage" (opportunistic silence). Participants responded to the items on seven-point Likert-type scales with response anchors ranging from 1 ("does not apply to me at all") to 7 ("does apply to me entirely"). Values of coefficient alpha, averaged over the four measurement occasions, were .90 for quiescent silence, .91 for acquiescent silence, .86 for prosocial silence, and .71 for opportunistic silence (alphas for each measurement occasion are in Table 2).

Employee Burnout was measured with Büssing and Perrar's (1992) German translation of items from the Maslach Burnout Inventory (MBI; Maslach & Jackson, 1981). As our sample was not restricted to service workers, we dropped three items specific to service work (e.g., "I deal very effectively with the problems of my recipients") and changed five of the item wordings so that they referred to colleagues instead of recipients (e.g., "I feel my colleagues blame me for some of their problems"). We also dropped two items from the emotional exhaustion dimension as they appeared to represent the overall concept of burnout and thus might limit our opportunities to discover dimension-specific effects (e.g., "I feel burned out from my work"). Emotional exhaustion was measured with six items (e.g., "I feel used up at the end of the workday"), depersonalization was measured with five items (e.g., "I've become more callous

toward people since I took this job"), and personal accomplishment was measured with six items (e.g., "I have accomplished many worthwhile things in this job"). Values of coefficient alpha, averaged over the four measurement occasions, were .73 for depersonalization, .78 for emotional exhaustion, and .70 for personal accomplishment on average (see Table 2 for details).

Analytic procedure

Preliminary analyses were conducted with scale score versions of the silence and burnout variables, using IBM SPSS v. 22.0.0.1. All remaining latent variable models were estimated using the structural equation modeling (SEM) package Mplus (v. 8, Muthen & Muthen, 2008-2017). A robust maximum likelihood (MLR) estimator was used in order to account for any deviations of the data from normality, and the corresponding adjustment recommended by Satorra and Bentler (2010) was made when conducting chi-square difference tests. Kline (2016) suggests that assessment of model fit rely upon a considered combination of information from a variety of sources, including the model chi-square along with its degrees of freedom and probability level, residuals, and three approximate fit indices including: (a) the Steiger-Lind Root Mean Square Error of Approximation (*RMSEA*, Steiger, 1990) along with its 90% confidence interval; (b) the Bentler (1990) Comparative Fit Index (*CFI*); and (c) the Standardized Root Mean Square Residual (*SRMR*). He also warns against application of rules of thumb, noting that "the consensus is that blind reliance on thresholds is no longer up to standard" (p. 268), and encourages the interpretation of these indices in the context of model complexity, sample size and other factors that might influence their values. In our study, models were expected to have smaller values of *RMSEA* and *SRMR*, with values above .10 indicating that there are potentially substantive problems with the model. Higher values of CFI were desired, with values of CFI much below .90 indicating potential issues with model fit.

Latent variable SEM models were used for a set of preliminary confirmatory factor analyses (CFA), estimated to assess the measurement quality of the silence and burnout measures. CFA models were also used to test whether the factor structure of these measures remained invariant over time, a necessary pre-requisite to the structural models used to test the hypotheses (McArdle, 2009). The hypothesized relationships of the four types of silence with the three burnout components were tested in separate longitudinal structural models. More specifically, we estimated a set of 12 auto-regression cross-lagged panel models for each possible silence-burnout pair. The structural paths in those models were specified as shown in Figure 1.

Auto-regressive cross-lagged panel models allow an assessment of the stability of the variables over time, as well as a simultaneous test both of the hypothesized effects of silence on burnout, and of the effects of burnout on silence. Liu, Mo, and Wang (2016; p. 382) describe such models as reflecting "the 'level-to-change' effect of a predictor at Time *t* on an outcome from Time *t* to Time *t+1*" and note that they have "implications in enhancing causal inferences by offering evidence on the reversed causality hypothesis and by alleviating third variable concerns." However, Liu et al. (2016) also voice some concerns with this type of model, especially that it does not "describe the form and duration of change of a particular construct" (p. 383). As describing the form of change was not the primary aim of our study, we believed the auto-regression model was a reasonable choice as it does a good job of controlling potential sources of endogeneity due to factors such as model misspecification and omitted reciprocal causal paths, although we return to the issue of model choice in our discussion.

RESULTS

Preliminary Analyses

Contextual information on opportunities for silence and employee responses. To get a

sense of how often employees might actually perceive an event where they could choose to voice or remain silent at work, we asked respondents to indicate for each measurement occasion whether and how often such an event occurred, and whether they responded with silence. The results indicated that 43-49% of the respondents at Times 2-4 indicated that they had experienced at least one such situation over the past six weeks, with around a quarter of respondents indicating multiple situations. (A higher proportion (70%) of respondents at Time 1 indicated experiencing at least one such situation, but note that the retrospective time period addressed in the item at this measurement occasion was six months.) Of those individuals who reported experiencing potential silence events, 65-68% reported that they kept silent at least once in the relevant time period. Neither age nor gender of the participant showed a significant relationship with silence event frequency or responding with silence. Supplementary chi-square analyses also indicated that, although not a perfect relationship, there was a significant likelihood that if an employee responded with a particular level of silence at one point in time, he or she was also likely to respond with a similar level of silence at an adjacent time (T1 to T2, $\chi^2_{(df=9)} = 486.738$, $p < .001$; T2 to T3, $\chi^2_{(df=9)} = 508.360$, $p < .001$; T3 to T4, $\chi^2_{(df=9)} = 626.568$, $p < .001$).

Dropout analysis. To assess whether participants who continued with the study through all four measurement occasions differed from those who did not, we compared responses of two participant groups who both had Time 1 data. One of these groups was still present for the Time 4 (final) measurement occasion, and the other group consisted of the remaining participants who dropped out of one or more of the Time 2, 3, and/or 4 measurement occasions. First, a series of *t*-tests indicated that there were no statistically significant mean differences between these two groups with respect to all Time 1 measures of silence, burnout, and gender. Indeed, with one exception (for depersonalization at Time 1 where the *p*-value associated with the *t*-test was .068),

the *p*-values for these tests of mean differences were .25 or higher. Given the high statistical power for these tests to find significant mean differences due to the large sample sizes, we concluded that dropouts did not differ from those who stayed in terms of their mean levels of silence, burnout, and gender composition.

Second, SEM analysis was used to compare the Time 1 silence-burnout variance-covariance (VC) matrices of these two groups. A model specifying complete invariance of all elements of the (VC) matrices for the two groups fit the data well, and was not significantly different from a model allowing all of these elements to be freely estimated. The relevant fit statistics for this model are $\chi^2 = 27.321$, $df = 21$, $p = .1605$; *RMSEA* = .032, *90% CI* [.000, .062]; *CFI* = .994; and *SRMR* = .057. In addition, all modification indices for this model were < 10. We thus concluded that the initial pattern of relationships amongst the silence and burnout variables did not differ for dropouts versus respondents continuing on with the study from Time 1 through to Time 4. This conclusion also supported the assumptions underlying our choice of treatment of missing data (i.e., ML estimation using all available information).

Manifest variable descriptive statistics for focal silence and burnout variables. Means and standard deviations for all study variables expressed in scale score form are presented in Table 1; a full table of correlations and estimates of internal consistency (alpha) for these variables is in Table 2. Internal consistency reliabilities across the four time periods were acceptable, ranging in value from .67 to .93 for the silence variables (median α=.88), and from .69 to .79 for the burnout variables (median α=.73).

Insert Table 1 about here

For each of the silence and burnout variables, we conducted a repeated-measures

MANOVA to determine whether the scale-score values of those variables showed any global upwards or downwards trends over time. Significance tests for these analyses are reported in the right-hand columns of Table 1. None of the multivariate significance tests for the overall effect of time in these analyses was statistically significant at a conventional $p < .05$ level (although the F statistic for quiescent and opportunistic silence had p-values < .10). These results suggest that there was either no, or at most minimal, sample-wide change in the average level of the study variables over time. These results might at first seem contradictory to our later findings showing relationships between changes in silence and burnout, however, the later results reflect the effects of positive and/or negative changes experienced by individual employees, as opposed to general upwards or downwards trends that would be reflected in the group means tested using the MANOVAs.

Correlations among the scale score values of all possible pairs of study variables (see Table 2) indicate statistically significant bivariate relationships for most of the silence-burnout pairs, providing preliminary support for some form of silence-burnout relationship. In addition, the pattern of values of the correlations provide some supportive evidence for discriminant validity among the four silence types, namely, correlations among the four different silence types within the same time period ranged from .24 to .61, while correlations within a single silence type going across time tended to be stronger, ranging from .34 to .76.

Insert Table 2 about here

CFA tests of construct validity and measurement invariance. Before proceeding to the hypothesis testing models, we assessed the quality of our measures by determining whether: (a) measures of the four silence types had discriminant validity and (b) all seven focal silence and

burnout latent variables had factorial invariance across the four measurement occasions (i.e., each measure represented the same construct at all measurement occasions).

Discriminant validity of the silence types was addressed by estimating a series of confirmatory factor analyses (CFAs) that compared the fits of factor structures with different dimensionalities, ranging from four silence factors (as intended) to a single silence factor. Time 1 data were used. Although the goodness-of-fit index was statistically significant for the intended four-factor model, $\chi^2 = 222.631$, $df = 48$, $p < .001$, other indices suggested that it fit the data adequately, *RMSEA* = .078, *CFI* = .940, and *SRMR* = .075. This fit improved substantially if a correlated uniqueness was allowed between two opportunistic silence indicators that both referred to being taken advantage of, however, our goal was simply to compare differences associated with factor dimensionality, so we made all comparisons to the original four-factor model without the correlated uniqueness. The four-factor model fit significantly better than all remaining models with lower factor dimensionality, indicating that the four silence types were distinct from each other. Correlations among the latent silence variables ranged from .25 (acquiescent silence with prosocial silence) to .58 (acquiescent silence with quiescent silence), and factor loadings were all moderate to strong and statistically significant.

Second, to assess measurement invariance over time, we estimated a series of four nested CFA models containing latent constructs for all seven of our focal variables at all four measurement occasions (i.e., there were 28 latent factors in the model). The models imposed an increasingly restrictive set of measurement invariance constraints. Specifically, in Model 1, all parameters were freely estimated. In Model 2, factor loadings for each latent construct were held invariant across the four time periods. Model 3 included the factor loading invariance constraints and added invariance constraints on the intercepts of the factor indicators. Model 4 included all

Model 3 constraints, and in addition, constrained factor variances for the same construct to be equal across the four time periods and also constrained the covariances among the seven variables measured at the same time to be invariant across measurement occasions. All models in the series used the same set of item-level indicator variables as indicators for the latent constructs, and they considered the potential for autocorrelation by allowing the residual terms of the same indicator variables in adjacent times to covary.

The fits of these nested models were compared using chi-square difference tests, as detailed in Table 3. When making comparisons of this type, the more constrained model (i.e., with a higher level of invariance) is preferred if the chi-square difference test comparing its fit with a less constrained model is not statistically significant. At a minimum, it was desired to have partial metric invariance (i.e., Model 2 or higher) in order to proceed with our hypothesis tests. As can be seen in Table 3, although all of the models had a statistically significant chi-square statistic, the *RMSEA* and *SRMR* values for all four models indicated acceptable fit. The *CFI* was lower than desired, and an inspection of modification indices indicated that model fit would be improved by freeing parameters that allowed uniquenesses to covary and/or items to cross-load on other factors. However, because our goal was to compare invariance restrictions and other approximate fit indicators suggested adequate fit, we did not make such modifications. Most importantly, the nested model comparisons showed that even the most restrictive invariance model did not significantly degrade fit over the freely estimated model, giving evidence that we could proceed to estimate our hypothesis-testing models incorporating invariance restrictions.

Insert Table 3 about here

Hypothesis Testing Models

Twelve hypothesis testing models (one for each possible silence type paired with each possible burnout dimension) were specified and estimated. These models specified a latent construct for the two relevant silence and burnout components, at each of the four time periods. Again, as was done for the measurement invariance models described earlier, item-level indicators were used, and we allowed for autocorrelation of the indicator residuals across adjacent time periods. In addition, the following equality constraints were placed on the models: (a) factor loadings for the same indicator variables were constrained equal across time; and (b) the (unstandardized) *x*, *y*, *a*, and *b* paths shown in Figure 1were each held equal across time. This latter set of equality constraints is consistent with the requirement for stationarity in relationships over time. The results from the tests of these models are described in the next three subsections. The first of these subsections addresses the estimates of the stability of silence and of burnout over time, taken from the hypothesis testing models. Although we did not have hypotheses about stability, it is of interest to know the extent to which silence and burnout are at relatively stable levels going across the sample. The second and third subsections provide direct evidence relevant to the hypotheses.

Estimation of stability over time. Table 4 summarizes the estimated stability coefficients (paths *x* and *y* in Figure 1) across time for each silence and burnout variable. The stability coefficients are estimated by regressing each variable at time *t* on the measure of that same variable at time *t - 1*. Within a given model, equality constraints were imposed in the estimation so that the *unstandardized estimates* of the stability coefficients for a given variable are required to be equal across time (the plausibility of this typical set of constraints was also supported by invariance analyses with our data). However, we also report standardized path coefficients for ease of interpretation, and note that these will vary slightly in value at different measurement

occasions because the variances used in the standardization process are not equality constrained even though the unstandardized path coefficients are. To provide a succinct report, Table 4 presents aggregated stability coefficients across the multiple models, as the same stability relationship was estimated in three different models for each of the silence variables (i.e., once for each pairing with the three burnout components) and four times for each of the burnout components (i.e., once for each pairing with the four silence types). Because all models rely on the same data set, values of estimates for the same stability coefficient going across models should be very similar, although there can be slight variations in the values due to the use of a full information maximum likelihood estimation procedure.

Insert Table 4 about here

As shown in Table 4, stability coefficients for the four types of silence behaviors were all statistically significant and were moderately strong, with standardized values ranging from .49 to .72. The burnout components also had statistically significant, strong stability coefficients, with standardized values ranging from .49 to .91. These stability coefficients quantify changes in the relative rankings of individuals over time. None of the variables studied had perfect stability over time (i.e., as would be indicated by a coefficient of 1.00), suggesting there is individual-level change that could be analyzed for all variables. Yet there is also an appreciable degree of stability over time for all variables – persons who tended to score higher on these measures at one point in time also tended to do so at other points in time.

Tests of the effects of silence on burnout. Estimates of the *a* path depicted in Figure 1 were used to assess whether each of the four silence types at a prior time has significant effects on the three burnout components at a subsequent time, as proposed in Hypotheses 1 (emotional exhaustion), 2 (depersonalization) and 3 (perceptions of reduced personal accomplishment).

These estimates were taken from the set of 12 structural models, cumulating across relevant models. As shown in the top half of Table 5, acquiescent silence behavior at an earlier time significantly predicted the burnout dimensions of emotional exhaustion and depersonalization, but not personal accomplishment. The average standardized effect for the prediction of emotional exhaustion was .07, and for the prediction of depersonalization it was .05. Quiescent silence showed a similar pattern of results, with average standardized coefficients of .09 and .05 respectively for the burnout dimensions of emotional exhaustion and depersonalization, and a non-significant relationship with personal accomplishment. Neither prosocial nor opportunistic silence showed statistically significant effects on any of the three burnout dimensions. Thus, Hypotheses 1 and 2 received partial support, suggesting that prior levels of acquiescent and quiescent silence predicted higher levels of subsequent depersonalization and emotional exhaustion, although the remaining two forms of silence (prosocial and opportunistic) did not have any significant effects on either of these burnout dimensions. Hypothesis 3 did not receive any support – that is, there was no evidence of effects of any of the four types on silence on feelings of reduced personal accomplishment.

Insert Table 5 about here

Tests of the effects of burnout on silence. Estimations of the *b* path depicted in Figure 1 from the 12 models were used to assess whether burnout could lead to silence. In Hypotheses 4-6, we proposed effects of prior levels of emotional exhaustion (H4), depersonalization (H5) and perceptions of reduced personal accomplishment (H6) on subsequent levels of silence. Results are summarized in the bottom half of Table 5, and were broadly supportive across the types of burnout. More specifically, emotional exhaustion had statistically significant, positive effects on three of the four silence types, with average standardized coefficients of $\beta = .13$ for acquiescent

silence, $\beta = .07$ for quiescent silence, and $\beta = .09$ for prosocial silence. The effect of emotional exhaustion on opportunistic silence was not statistically significant. Depersonalization had statistically significant effects on all four silence types, with average standardized coefficients of $\beta = .19$ for acquiescent silence, $\beta = .11$ for quiescent silence, $\beta = .09$ for prosocial silence, and $\beta = .10$ for opportunistic silence. Perceptions of reduced personal accomplishment also had statistically significant effects on all four silence types, with average standardized coefficients of $\beta = .23$ for acquiescent silence, $\beta = .15$ for quiescent silence, $\beta = .13$ for prosocial silence, and $\beta = .15$ for opportunistic silence.

Robustness checks. As a robustness check, we re-estimated all of the bi-directional effects models, treating the measured item-level indicators as categorical variables rather than continuous variables. This was done because, although values of skew and kurtosis were within the mild-to-moderate range where use of the robust maximum likelihood estimator that we employed is acceptable, the pattern of distribution across values showed an appreciable portion of the sample reporting no engagement in silence behaviors at a given measurement period. Thus we re-ran the models using a weighted least squares estimator (WLSMV) and treated all measured variables as ordered categorical.

Findings from these re-estimations were reassuringly very similar to our original results. Specifically, all models had an acceptable fit to the data. The categorical variable models tended to have more warnings related to negative variance estimates than the previous results with the MLR estimator, but the pattern and relative magnitudes of the estimates matched well. Specifically, all of the previously identified statistically significant effects of silence on burnout were also statistically significant in the re-estimations. In addition, one of the previously non-significant effects was now statistically significant, i.e., there was a significant, positive effect of

opportunistic silence on depersonalization. Similarly, all of the previously observed significant effects of burnout on silence were reproduced in the re-estimation, and an additional previously non-significant effect was now statistically significant, i.e., for the positive effect of emotional exhaustion on opportunistic silence.

DISCUSSION

In this article, we have developed theory and provided evidence from a four-wave longitudinal study designed to tease out the relationships of differentially motivated employee silence with burnout. Our descriptive data suggest that deliberately remaining silent is not a rare event in organizations, with close to half of our participants reporting that they chose to be silent in a situation where their input could be valuable to the organization at least once in a six-week time period. Because our sample had a broad representation of job-holders and organizations, these results also suggest that silence may be relatively common across different types of jobs and work settings. Indeed, these proportions are likely a lower bound for silence behavior, as some employees might have remained silent in situations that they did not experience or describe as a discrete event. In addition, a meaningful proportion of the participants reported experiencing multiple silence episodes on a recurring basis.

The observed zero-order correlations of the silence and burnout variables found in our study almost all suggest the presence of positive relationships between all possible silence-burnout pairings, at all measurement occasions (exceptions are for correlations of emotional exhaustion and reduced personal accomplishment with opportunistic silence). However, correlational analysis does not establish a causal direction and may even occur when there is no true causal relationship. Our longitudinal design makes an important contribution by allowing a comparison of evidence for two causal directions, i.e., silence -> burnout and burnout -> silence

while controlling for many possible third variable explanations. Indeed, our results suggest causal effects of burnout on subsequent levels of motivated silence for almost all possible pairings of the silence and burnout variables. However, our results suggest that whether there are effects of silence on subsequent burnout depends on the underlying motives for silence. These findings and their implications are discussed in more detail in the following paragraphs.

Silence -> Burnout Relationships: Summary of Findings and their Theoretical Implications

The proposed negative effect of silence on health was supported for two of the four forms of silence behaviour and two of the three burnout components. Specifically, silence behaviors motivated by resignation or fear significantly predicted emotional exhaustion (H1) and depersonalization (H2) at the next measurement time. However, they did not significantly predict perceptions of reduced personal accomplishment (H3). And, neither prosocial nor opportunistic silence significantly predicted any burnout component. This pattern of differential results from tests of the silence→burnout link underscores the importance of distinguishing different forms of silence based on their underlying motives (Brinsfield, 2013; Knoll & van Dick, 2013; van Dyne et al., 2003).

Communication research (e.g., Kurzon, 2007; Tannen & Saville-Troike, 1985) may provide some cluses about when silence may or may not harm the individual engaging in it. For example, Tannen (1985; see also Goffman, 1967) indicates that "whether or not silence is uncomfortable in interactions hinges on whether or not participants feel something should be said" (p. 96). In our sample, employees who chose to remain silent out of prosocial or selfish reasons seemed not to suffer burnout (at least in the short term) from withholding their views. This might be because their silence is more voluntary compared to the forms of silence based on fear or resignation. Considering the more voluntary forms of silence as different from, and

potentially less harmful than, the less voluntary forms suggests those who remain silent are not merely victims but in some cases might be empowered actors who use silence to achieve a personal or social advantage (Bies, 2009; Donaghey et al., 2011; Kurzon, 2007). Interestingly, while such voluntary forms of silence could potentially harm organizations or enable unethical situations to continue (Umphress & Bingham, 2011), our results suggest they do not appear to have negative short-term well-being consequences for individual employees.

If, in contrast, employees remain silent because they think that voice is dangerous or futile, silence has been imposed on them. Imposed forms of silence occur when employees believe that their choice of, or control over, voice is restricted by external factors (see Kurzon, 2007). Imposed silence often involve struggles of individuals and collectives with contextual constraints (e.g., Ashforth, 1989) which, in turn, are associated with negative consequences for well-being and health. Our findings that imposed forms of silence predict subsequent exhaustion and depersonalization suggest potential explanatory mechanisms for the silence→burnout link, namely processes of self-regulation that are associated with the negative affective system and the inhibition of feelings, thoughts and behavior, as well as processes such as diminished personal involvement due to a lack of control (e.g., Baumeister & Vohs, 2007; Grandey, 2000; Gross & Levenson, 1997; Kahn, 1990; Morrison, See, & Pan, 2015; Seligman, 1972). These specific findings may inform our understanding of potential mediators of silence and health relationships, an issue we come back to in the section on future research.

Burnout -> Silence Relationships: Summary of Findings and their Theoretical Implications

Our findings regarding the burnout→silence link suggest silence might be an important negative consequence of work-related health and well-being issues. With regard to Hypotheses 4 to 6, we found evidence for the effects of prior levels of the three burnout components on

subsequent levels of all four types of silence. In contrast to the silence→burnout link, the effects from prior burnout to subsequent silence do not appear to depend much on the silence type. The only exception to significant burnout-> silence relationships was for the effect of emotional exhaustion on opportunistic silence. Results showing effects of burnout on silence appeared strongest for the prediction in acquiescent silence. Taken as a set, these findings are in accord with prior burnout research suggesting that burnout results in the adoption of coping strategies that focus on detachment and the withholding of effort (Cropanzano et al., 2003).

Given the positive association between voice and performance (Bashshur & Oc, 2015; Ng & Feldman, 2012), silence may function as a behavioral process that could potentially mediate relationships of lower health with lower performance. The pattern of our findings also offers insights into any differences (or lack thereof) due to the silence type or the burnout dimension. Although it is premature to make definitive conclusions, our results did not show large differences in effect sizes across the three burnout components in the prediction of silence. This suggests that the lack of energy associated with emotional exhaustion is neither the main nor the only reason for the link between health and silence. This is important as the exhaustion dimension is often used to represent burnout (e.g., in the Copenhagen Burnout Inventory; Kristensen, Borritz, Villadsen, & Christensen, 2005) and prior research has mainly focused on the link between exhaustion and voice or silence (e.g., Ng & Feldman, 2012; Qin, Direnzo, Xu, & Duan, 2014). Thus, relying primarily on exhaustion effects may miss important effects that can follow from depersonalization and perceptions of reduced personal accomplishment. This point has further implications as in our study the latter two dimensions predicted silence forms that are rather uncharted with respect to antecedents, namely prosocial and opportunistic silence. The finding that burnout symptoms predicted subsequent acquiescent and quiescent silence is

particularly interesting as these two forms reflect employees' perceptions of externally imposed restrictions on self-expression. This finding provides further evidence for the possibility that impaired health and well-being affects employee perceptions of their work conditions (Lang, Bliese, Lang, & Adler, 2011).

Practical Considerations and Implications

Although the estimated effect sizes were not large in an absolute sense, it is important to remember three relevant points. First, these effect sizes are partialed coefficients: because prior levels of burnout are controlled for, they represent the average change in the value of a burnout component associated with a one unit change in silence behavior from the immediately prior measurement occasion. Second, the measurement occasions were separated by only approximately 6 weeks. To observe any statistically reliable effect within this timeframe, even if it is relatively small, is notable given that we controlled for prior levels of silence and burnout in the model. Third, these effects were detected at a statistically significant level, even though overall in the sample both silence and burnout were relatively stable. This suggests that we were not picking up on generic effects that might simply be due to when the measures were collected (e.g., seasonal changes), but rather, were detecting effects that were experienced by individual employees in the sample. These results are consistent with our notions of the nature of opportunities for silence behavior, which may arise unevenly and unexpectedly.

Relatedly, the majority of participants in our study did not report extremely high levels of silence behavior, as indicated by observed means for all types of silence that were below the scale midpoint. This leads us to believe that our sample consisted of rather typical employees in fairly ordinary organizational settings. Yet in spite of this, we still found evidence of negative effects of silence on employee psychological health. This observation leads us to speculate that

health consequences might be even more pronounced in extreme settings that lead employees to engage in high levels of silence behavior (e.g., Harlos, 2016; Haskins & Freeman, 2015), especially when that behavior is externally coerced.

We found reliable support for a negative effect of imposed silence on psychological health which is in line with research on self-concealment in other domains (e.g., Larson & Chastain, 1990), as well as with various models of stress-strain in organizational settings (e.g., Conservation of Resources Theory, Hobfoll, 1989; Job Demands-Resources Theory, Bakker & Demerouti, 2017; Job Demand Control Model, Karasek, 1979). However, our findings also suggest that those who tend to prefer silence due to a belief that speaking up is dangerous and/or futile need to consider that remaining silent comes with a personal price as well. While the specific circumstances and potential consequences of breaking silence are also important, the prospects of an increased burnout risk might tip employees' tendency to either voice their concerns or to consider the more drastic strategy of leaving a place in which they feel uncomfortable to express their views openly. In that, our findings dovetail with recent research emphasizing that proactive behavior has many benefits for employee well-being and health (e.g., Cangiano & Parker, 2016).

So far, the well-known negative consequences of employee silence (e.g., reduced individual and collective learning, higher safety risks) have made overcoming silence a topic for those who are concerned with specific performance indicators such as knowledge sharing and error detection. Our findings that imposed silence relates to higher burnout call for a stronger involvement of those who are concerned with occupational health. And considering that burnout also appears to contribute to silence, the knowledge of occupational health experts could help those who aim at overcoming silence.

Limitations and directions for future research

Although we used a relatively strong research design (a longitudinal data collection with four measurement occasions, spanning a time period of approximately 18 weeks) and engaged in comprehensive data analysis, we acknowledge that there are a number of boundary conditions and limitations to our findings. One limitation is that we relied on self-report data, and do not know whether estimates of silence-burnout relationships are biased by self-ratings. Future research could add data collected from multiple sources, but surely needs to consider the difficulties in estimating other people's silence and the subjective quality of their burnout experience (van Dyne et al., 2003).

A second limitation is that, although drawing on a longitudinal study and controlling for baseline values and reverse causal effects, our findings bear some ambiguities in terms of timeframe, causality judgments, and whether results can be interpreted as involving changes. For example, our findings that prosocial and opportunistic silence do not relate to subsequent burnout should be tempered by the fact that effects were examined over a relatively short time period (i.e., 18 weeks in total, with increments of 6 weeks per observation period). It is possible, for example, that prosocial silence has positive short term effects by contributing to a positive work atmosphere and protecting cooperative relationships, while over the long run, it may slow error detection and undermine relationships (see Perlow & Repenning, 2009). Opportunistic silence, too, may have positive short-term effects but over more extended periods it might hamper knowledge sharing with detrimental effects on individual and collective performance and team climate (Černe et al., 2014) which eventually affect health and well-being (Heaphy & Dutton, 2008). Similarly, some of the observed null results might have occurred because perceptions of reduced personal accomplishments may need more time to manifest than perceptions of

exhaustion. Importantly, we note that even the findings that supported our hypotheses may differ when examined in a different timeframe.

Relatedly, we note that the parameter estimates from our models do not disentangle the effects of between-person differences from within-person change, and that despite other attractive features, the auto-regressive approach comes under some criticism for this reason (see, for example, Grimm, Ram, & Estabrook, 2017; Liu et al., 2016; McArdle, 2009). An approach involving latent difference scores (aka latent change scores) is better suited to the specific purpose of determining whether changes in silence directly influence changes in burnout, and *vice versa* (Grimm et al., 2017; Liu et al., 2016). Following a reviewer's suggestion, we performed some exploratory analysis employing dual change latent difference score models with our data. In brief, we found that our longitudinal silence data could be described by such models, but not our burnout data. That does not mean that we have concluded that difference score models are inappropriate for this general research question. It is possible that capturing reliable change in burnout as specified in these types of models may involve longer measurement periods than those needed to capture reliable change in silence behavior, and also might need more targeted measurement items that capture other aspects such as severity and persistence.

We also note that while it is tempting to compare the relative strengths of the significant silence to burnout versus burnout to silence effects, it can potentially be misleading to do so. Certainly the unstandardized estimates for the burnout -> silence relationships tend to be larger. However, the metrics used to measure silence versus burnout are rather different, and when we look at the relative magnitudes of the statistically significant, standardized effects of both types of relationships, they are much closer in size. Making a direct comparison on strength of the relationship is even more difficult as the timing of the measurement occasions may be more

optimal for capturing effects in one direction than effects in the other direction. What can be said is that we found more consistent support for causal effects when looking at the effects of burnout on silence as opposed to effects of silence on burnout.

Another limitation is that we did not specify the content of the critical issue participants had in mind when reporting their silence behaviors, nor did we attempt to tease out whether specific motives remained significant predictors in the presence of other motives. Our goal was to examine the general relationship of silence and burnout, and thus for the time being we needed to overlook the potential that the effects of silence probably differ depending on the severity and even the nature of the issue. For example, the effects of prosocial silence may differ depending on whether the silence is about a manager's boring meetings compared to being about his/her abusive leadership style (also see Burris, 2012 for a discussion of risks/rewards of speaking up). We would not be surprised if prosocially motivated withholding of concerns about unethical behaviors such as bullying may cause guilt, regret and rumination, all of which potentially could result in impaired well-being and health (Giacalone & Pomislo, 2010).

We cannot yet do more than speculate about the cognitive, emotional, and behavioral processes that are potentially responsible for the relationships of silence and burnout. Our aim was to first examine the basic relationships with a design that is more rigorous than typical for silence research. This required keeping the survey brief to minimize dropout and retain a sufficient sample size. Thus we did not include measures of the potential mediators and moderators implied by our theoretical arguments. A critical next step is to expand the model we presented in Figure 1 by including mediators. For example, we know from our study that all three burnout dimensions relate to silence over time, and we know from Conservation of Resources theory (Hobfoll, 1998) that employees who experience exhaustion, and thus resource

loss, may hesitate to invest additional resources into speaking up. This implies that an employee who experiences exhaustion may ruminate longer in a situation where voice is needed and thus miss the opportunity to initiate change. Once an opportunity to address critical issues is gone, the employee may experience negative high arousal affect such as anger, or negative low arousal affect such as sadness. Indeed, previous research has linked feelings of anger and sadness to quiescent and acquiescent silence (Kirrane et al., 2017; Pinder & Harlos, 2001), the two silence types that predicted exhaustion and depersonalization in our study. Both of these emotions may furthermore keep memories of the latent voice episode alive and fuel rumination on revenge, unfinished tasks, or the hopelessness of the situation (Nolen-Hoeksema et al., 2008; Weigelt, Syrek, Schmitt, & Urbach, 2018).

Besides addressing mediating processes, future research could also study whether the effects we identified are at least partially contingent upon individual differences or other stressors and buffers in the workplace environment. For example, extroverted employees may suffer more when having to withhold their views whereas employees who grew up in a culture characterized by a high power distance might not be too irritated when having to remain silent at work. Further, although our sample consisted of working adults who were holding either part-time or full-time positions ranging from entry-level to upper management, and were in a variety of occupational sectors, the study likely does not fully represent the working population. Future research could include potential moderator variables such as position level and occupation, or they could investigate effects within more specific, homogenous samples. For example, there are certainly occupational groups working under particularly difficult conditions which not only impair their health and well-being but also deny them voice opportunities (Bowen & Blackmon, 2003; Ehrenreich, 2001; Leana, Mittal, & Stiehl, 2012). Considering context is important,

because although the longitudinal design of the current study substantially advanced our ability to estimate causal effects, it is still possible that there may be 'third variable' explanations for our findings (Johns, 2017).

In combination with the effects of imposed forms of silence on the burnout dimensions of emotional exhaustion and depersonalization, the effects from burnout to silence suggest the potential of a downward loss spiral such as that described in the Job Demands-Resources Theory literature (Bakker & Demerouti, 2017). Although our study is not designed specifically to test for spiral effects, this possibility would be worth investigating in future studies. Such attempts could draw upon developmental and clinical psychological research. For example, Harter and colleagues (Harter, 2002; Harter, Marold, Whitesell, & Cobbs, 1996; Harter, Waters, & Whitesell, 1997) proposed a downward spiral involving impaired health and perceived or actual restrictions to genuine expression of feelings and opinions.

Conclusions

Overall, our findings extend and integrate research on silence and burnout in organizations. Employee surveys and investigative reports suggest that, at least in the US and Europe, many workers suppress or withhold genuine expressions related to work-related circumstances (Barry, 2007; Eurofound, 2012; Haskins & Freeman, 2015). Yet, the success of current management approaches such as shared leadership and empowerment rely heavily on employee involvement and initiative (Fay & Sonnentag, 2012; Griffin, Neal, & Parker, 2007). In addition, the increasing densification of work processes along with the greater autonomy given to employees transfers directly to the employees themselves the responsibility for caring – for work outcomes, but also for the impact their work has on themselves, their colleagues, and external stakeholders (e.g., Barker, 1993; Michel, 2014). Our study suggests that imposed forms of

silence not only limit individual and organization learning and the detection of malfunction as has been previously established, but also relate to employee exhaustion and depersonalization. In addition, our study is unique in showing evidence that burnout can be an antecedent of at least four different types of employee silence behaviors. More generally, we believe our work demonstrates the benefits of a differentiated view of employee silence and of considering relationships of silence with health and well-being over time.

REFERENCES

Argyris, C. & Schön, D. (1978). *Organizational learning: A theory of action perspective.* Reading, MA: Addison-Wesley.

Ashforth, B. (1989). The experience of powerlessness in organizations. *Organizational Behavior & Human Decision Processes, 43*, 207-242.

Ashforth, B.E. & Lee, R.T. (1990). Defensive behavior in organizations: A preliminary model, *Human Relations, 43*, 621-648.

Bakker, A. B., & Demerouti, E. (2017). Job Demands-Resources Theory: Taking stock and looking forward. *Journal of Occupational Health Psychology, 22*, 273-285.

Bakker, A.B., Demerouti, E., & Verbeke, W. (2004). Using the Job Demands-Resources Model to predict burnout and performance. *Human Resource Management, 43*, 83-104.

Bakker, A. B., Van Emmerick, H., & Van Riet, P. (2008). How job demands, resources and burnout predict objective performance: A constructive replication. *Anxiety, Stress, and Coping, 21*, 309-324.

Bandura, A. (1991). Social cognitive theory of self-regulation. *Organizational Behavior and Human Decision Processes, 50*, 248-287.

Barker, J.R. (1993). Tightening the iron cage: Concertive control in self-managing teams. *Administrative Science Quarterly, 38*, 408-437.

Barry, B. (2007). *Speechless: The erosion of free expression in the American workplace*. San Francisco: Berrett-Koehler.

Bashshur, M.R. & Oc, B. (2015). When voice matters: A multi-level review of the impact of voice in organizations. *Journal of Management, 41*, 1530-1554.

Baumeister, R.F. & Vohs, K.D. (2007). Self-regulation, ego-depletion, and motivation. *Social and Personality Psychology Compass, 1*, 115-128.

Beehr, T. A. & Newman, L. E. (1978). Job stress, employee health, and organizational effectiveness: A facet analysis model and literature review. *Personnel Psychology, 31*, 665-699.

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin, 107*, 238-246.

Bies, R.J. (2009). Sounds of silence: Identifying new motives and behaviors. In J. Greenberg & M. S. Edwards (eds), *Voices and silence in organizations* (pp. 157-171). Bingley: Emerald Publishing Group.

Bolino, M. C. & Turnley, W. H. (2005). The personal costs of citizenship behavior: The relationship between individual initiative and role overload, job stress, and work–family conflict. *Journal of Applied Psychology, 90*, 740-748.

Bowen, F. & Blackmon, K. (2003). Spirals of silence: The dynamic effects of diversity on organizational voice. *Journal of Management Studies, 40*, 1393-1417.

Brinsfield, C.T. (2013). Employee silence motives: Investigation of dimensionality and development of measures. *Journal of Organizational Behavior, 34*, 671-697.

Büssing, A. & Perrar, K.-M. (1992). Die Messung von Burnout. Untersuchung einer deutschen Fassung des Maslach Burnout Inventory (MBI-D). *Diagnostica, 38*, 328-353.

Burris, E.R. (2012). The risks and rewards of speaking up: Responses to voice in organizations. *Academy of Management Journal, 55*, 851-875.

Burris, E.R., Detert, J.D., & Chiaburu, D.S. (2008). Quitting before leaving: Attachment and detachment in employee voice. *Journal of Applied Psychology, 93*, 912-922.

Cangiano, F. & Parker, S. K. (2016). Proactivity for mental health and well-being. In S. Clarke, T.M. Probst, F. Guldenmund, & J. Passmore, S. (Eds.), *The Wiley Blackwell handbook of the psychology of occupational safety and workplace health* (pp. 228–250). Chichester, UK:

Wiley-Blackwell.

Carver, C. S. & Scheier, M. F. (1998). *On the self-regulation of behavior.* New York: Cambridge University Press.

Černe, M., Nerstad, C.G.L., Dysvik, A., & Skerlavaj, M. (2014). What goes around comes around: Knowledge hiding, perceived motivational climate, and creativity. *Academy of Management Journal, 57*, 172-192.

Chamberlin, M., Newton, D. W., & LePine, J.A. (2017). A meta-analysis of voice and its promotive and prohibitive forms: Identification of key associations, distinctions, and future research directions. *Personnel Psychology, 70*, 11-71.

Collinson, D. (1994). Strategies of resistance: power, knowledge and subjectivity in the workplace. In J. Jermier, D. Knights, & W. Nord (Eds.), *Resistance and power in organizations* (pp. 25-68). London: Routledge.

Connelly, C.E., Zweig, D., Webster, J., & Trougakos, J. (2012). Knowledge hiding in organizations. *Journal of Organizational Behavior, 33*, 64-88.

Cortina, L.M. & Magley, V.J. (2003). Raising voice, risking retaliation: Events following interpersonal mistreatment in the workplace. *Journal of Occupational Health Psychology, 8*, 247-265.

Cropanzano, R., Rupp, D.E., & Byrne, Z.S. (2003). The relationship of emotional exhaustion to work attitudes, job performance and organizational citizenship behaviors. *Journal of Applied Psychology, 88*, 160-169.

Deci, E.L. & Ryan, R.M. (2000). The “what” and “why” of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry, 11*, 227-268.

Detert, J.R. & Edmondson, A.C. (2011). Implicit voice theories: Taken-for-granted rules

of self-censorship at work. *Academy of Management Journal, 54*, 461-488.

Donaghey, J., Cullinane, N., Dundon, T., & Wilkinson, A. (2011). Re-conceptualising employee silence: Problems and prognosis. *Work, Employment & Society, 25*, 51-67.

Edmondson, A. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly, 44*, 350-383.

Edmondson, A. C. & McManus, S. E. (2007). Methodological fit in management field research. *Academy of Management Review, 32*, 1155-1179.

Ehrenreich, B. (2001). *Nickel and dimed: On (not) getting by in America.* New York: Henry Holt and Company.

Eurofound (2012). *Trends in job quality in Europe. A report based on the fifth European Working Conditions Survey.* Luxembourg: Publications Office of the European Union.

Fay, D. & Sonnentag, S. (2010). A look back to move ahead: New directions for research on proactive performance and other discretionary work behaviours. *Applied Psychology: An International Review, 59*, 1-20.

Festinger, L. (1957). *A theory of cognitive dissonance*. Stanford, CA: University Press.

Fleming, P., & Spicer, A. (2003). Working at a cynical distance: Implications for power, subjectivity, and resistance. *Organization, 10*, 157-179.

Ford, M. T., Cerasoli, C. P., Higgins, J. A., & DeCesare, A. L. (2011). Relationships between psychological, physical, and behavioural health and work performance: A review and meta-analysis. *Work & Stress, 25*, 185-204.

Giacalone, R. A. & Promislo, M. D. (2010). Unethical and unwell: Decrements in well-being and unethical activity at work. *Journal of Business Ethics, 91*, 275-297.

Gilligan, C. (1982). *In a different voice: Psychological theory and women's development.*

Cambridge, MA: Harvard University Press.

Gilligan, C. (1993). Joining the resistance: Psychology, politics, girls, and women. In L. Weis & M. Fine (Eds.), *Beyond silenced voices* (pp. 143–168). Albany, NY: State University of New York Press.

Goffman, E. (1967). *Interaction ritual: Essays on face-to-face behavior.* New York: Doubleday.

Grandey, A. A. (2000). Emotional regulation in the workplace: A new way to conceptualize emotional labor. *Journal of Occupational Health Psychology, 5*, 95-110.

Greenberg, J. & Edwards, M. (Eds.) (2009). *Voice and silence in organizations.* Bingley, UK: Emerald Group Publishing Limited.

Griffin, M.A., Neal, A., & Parker, S.K. (2007). A new model of work role performance: Positive behavior in uncertain and interdependent contexts. *Academy of Management Journal, 50*, 327-347.

Grimm, K. J., Ram, N., Estabrook, R. (2017). *Growth modeling: Structural equation and multilevel modeling approaches.* New York: Guilford Press.

Gross, J.J. & Levenson, R.W. (1997). Hiding feelings: The acute effects of inhibiting negative and positive emotion. *Journal of Abnormal Psychology, 106*, 95-103.

Halbesleben, J.R.B. & Buckley, M.R. (2004). Burnout in organizational life. *Journal of Management, 30*, 859-879.

Hakanen, J.J. & Schaufeli, W. (2012). Do burnout and work engagement predict depressive symptoms and life satisfaction? A three-wave seven-year prospective study. *Journal of Affective Disorders, 141*, 415-424.

Hakanen, J.J., Schaufeli, W.B., & Ahola, K. (2008). The job demands-resources model:

A three-year cross-lagged study of burnout, depression, commitment and work engagement. *Work & Stress, 22*, 224-241.

Harlos, K. (2001). When organizational voice systems fail: More on the deaf-ear syndrome and frustration effects. *Journal of Applied Behavioural Science, 31*, 324–342.

Harlos, K. (2016). Employee silence in the context of unethical behavior at work: A commentary. *German Journal of Human Resource Management, 30*, 345-355.

Harter, S. (1997). The personal self in social context: Barriers to authenticity. In R. Ashmore & L. Jussim (Eds.), *Self and identity: Fundamental issues (pp. 81-105).* New York: Oxford University Press.

Harter, S. (2002). Authenticity. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of positive psychology* (pp. 382–394). New York, NY: Oxford University Press.

Harter, S., Marold, D. B., Whitesell, N.R., & Cobbs, G. (1996). A model of the effects of parent and peer support on adolescent false self behavior. *Child Development, 67*, 360-374.

Harter, S., Waters, P., & Whitesell, N.R. (1997). Lack of voice as a manifestation of false self behavior: The school setting as a stage upon which the drama of authenticity is enacted. *Educational Psychologist, 32*, 153-173.

Haskins, M.E. & Freeman, R.E. (2015). What a manager should never want to hear: silence. *Management Decision,* 53, 1300-1311.

Heaphy, E. D. & Dutton, J.E. (2008). Positive social interactions and the human body at work: Linking organizations and physiology. *Academy of Management Review, 33*, 137-162.

Hirschman, A.O. (1970). *Exit, voice and loyalty. Responses to decline in firms, organizations and states.* Cambridge, MA: Harvard University Press.

Hobfoll, S.E. (1989). Conservation of resources: A new attempt at conceptualizing stress.

American Psychologist, 44, 513–524.

Hochschild, A.R. (1983). *The managed heart: Commercialization of human feeling.* Berkeley: University of California Press.

Hülsheger, U.R. & Schewe, A.F. (2011). On the costs and benefits of emotional labor: A meta-analysis of three decades of research. *Journal of Occupational Health Psychology*, *16*, 361–389.

Janis, I.L. (1972). *Victims of Groupthink.* New York: Houghton Mifflin.

Johns, G. (2017). Reflections on the 2016 Decade Award: Incorporating context in organizational research. *Academy of Management Review, 42*, 577-595.

Judge, T. A., Bono, J. E., Thoresen, C. J., & Patton, G. K. (2001). The job satisfaction-job performance relationship: A qualitative and quantitative review. *Psychological Bulletin, 127*, 376-407.

Judge, T.A., Erez, A., Bono, J.E., & Thoresen, C.J. (2003). The Core Self-Evaluations Scale (CSES): Development of a measure. *Personnel Psychology, 56*, 303-331.

Kahn, W.A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal, 33*, 692-724.

Kahn, R.L., Wolfe, D.M., Quinn, R.P., Snoek, J.D., & Rosenthal, R.A. (1964). *Organizational stress: Studies in role conflict and ambiguity.* New York: Wiley.

Karasek R.A. (1979). Job demands, job decision latitude, and mental strain: Implications for job redesign. *Administrative Science Quarterly, 24*, 285-308.

Kassing, J.W. (2000). Exploring the relationship between workplace freedom of speech, organizational identification, and employee dissent. *Communication Research Reports, 17*, 387-396.

Kirrane, M., O'Shea, D., Buckley, F., Grazi, A., & Prout, J. (2017). Investigating the role of discrete emotions in silence versus speaking up. *Journal of Occupational and Organizational Psychology, 90*, 354–378.

Kish-Gephart, J., Detert, J., Trevino, L. K., & Edmondson, A. (2009). Silenced by fear: The nature, sources, and consequences of fear at work. *Research in Organizational Behavior, 29*, 163–193.

Kline, R. B. *Principles and practice of structural equation modeling (4th ed.)*. New York: Guilford Press.

Knoll, M. & Redman, T. (2016). Does the presence of voice imply the absence of silence? The necessity to consider employees' affective attachment and job engagement. *Human Resource Management, 55*, 829-844.

Knoll, M., & van Dick, R. (2013). Do I hear the whistle…? A first attempt to measure four forms of employee silence and their correlates. *Journal of Business Ethics, 113*, 349-362.

Knoll, M., Wegge, J., Unterrainer, C., Silva, S., & Jønsson, T. (2016). Is our knowledge on voice and silence in organizations growing? Building bridges and (re)discovering opportunities. *German Journal of Human Resource Management, 30*, 161-194.

Kristensen, T.S., Borritz, M., Villadsen, E., & Christensen, K.B. (2005). The Copenhagen Burnout Inventory: a new tool for the assessment of burnout. *Work & Stress, 19*, 192-207.

Kurzon, D. (1992). When silence may mean power. *Journal of Pragmatics, 18*, 92-95.

Kurzon, D. (2007). Towards a typology of silence. *Journal of Pragmatics, 39*, 1673-1688.

Lang, J., Bliese, P. D., Lang, J.W.B., & Adler, A.B. (2011). Work gets unfair for the depressed: Cross-lagged relations between organizational justice perceptions and depressive symptoms. *Journal of Applied Psychology, 96*, 602-618.

Larson, D.G. & Chastain, R.L. (1990). Self-concealment: Conceptualization, measurement, and health implications. *Journal of Social and Clinical Psychology, 9*, 439-455.

Leana, C.R., Mittal, V., & Stiehl, E. (2012). Organizational behavior and the working poor. *Organization Science, 23*, 888-906.

Lee, R.T. & Ashforth, B.E. (1996). A meta-analytic examination of the correlates of the three dimensions of job burnout. *Journal of Applied Psychology, 81*, 123-133.

Liu, Y., Mo, S. Song, Y., & Wang, M. (2016). Longitudinal analysis in occupational health psychology: A review and tutorial of three longitudinal modeling techniques. *Applied Psychology: An International Review, 65*, 379-411.

Livne, Y., & Rashkovits, S. (2018). Psychological empowerment and burnout: Different patterns of relationship with three types of job demands. *International Journal of Stress Management, 25*, 96-108.

Loeppke, R., Taitel, M., Haufle, V., Parry, T., Kessler, R., & Jinnett, K. (2009). Health and productivity as a business strategy: A multiemployer study. *Journal of Occupational and Environmental Medicine, 51*, 411-428.

McArdle, J. J. (2009). Latent variable modeling of differences and changes with longitudinal data. *Annual Review of Psychology, 60*, 577-605.

Maslach, C. & Jackson, S.E. (1981). The measurement of experienced burnout. *Journal of Occupational Behavior, 2*, 99-113.

Maslach, C., Schaufeli, W.B., & Leiter, M.P. (2001). Job burnout. *Annual Review of Psychology, 52*, 397-422.

Melamed, S., Shirom, A., Toker, S., Berliner, S., & Shapira, I. (2006). Burnout and risk of cardiovascular disease: Evidence, possible causal paths, and promising research directions.

Psychological Bulletin, 132, 327-353.

Michel, A.A. (2014). Participation and self-entrapment: A 12-year ethnography of Wall Street participation practices' diffusion and evolving consequences. *The Sociological Quarterly 55*, 514-536.

Milliken, F. J., Morrison, E. W., & Hewlin, P. F. (2003). Choosing to stay silent at work: What employees don't speak about and why. *Journal of Management Studies, 40*, 1453-1476.

Milliken, F. J., Schipani, C., Bishara, N. & Prado, A. (2015). Linking workplace practices to community engagement: The case for encouraging employee voice. *Academy of Management Perspectives, 29*, 405-421.

Morrison, E. W. (2014). Employee voice and silence. *Annual Review of Organizational Psychology and Organizational Behavior, 1*, 173-197.

Morrison, E. W. & Milliken, F. (2000). Organizational silence: A barrier to change and development in a pluralistic world. *Academy of Management Review, 25*, 706-725.

Morrison, E. W., See, K. E., & Pan, C. (2015). An approach-inhibition model of employee silence: The joint effects of personal sense of power and target openness. *Personnel Psychology, 68*, 547-580.

Muthén, L. K., & Muthén, B. O. (2008-2017). *Mplus user's guide (eighth edition).* Los Angeles, CA: Muthén & Muthén.

Near, J.P. & Miceli, M.P. (1996). Whistle-blowing: Myth and reality. *Journal of Management, 22*, 507-526.

Newheiser, A.K. & Barreto, M. (2014). Hidden costs of hiding stigma: Ironic interpersonal consequences of concealing a stigmatized identity in social interactions. *Journal of Experimental Social Psychology, 52*, 58-70.

Ng, T.W.H. & Feldman, D.C. (2012). Employee voice behavior: A meta-analytic test of the conservation of resources framework. *Journal of Organizational Behavior 33*, 216-234.

Noelle-Neumann, E. (1974). The spiral of silence: A theory of public opinion. *Journal of Communication, 24*, 43-51.

Nolen-Hoeksema, S., Wisco, B.E., & Lyubomirsky, S. (2008). Rethinking rumination. *Perspectives on Psychological Science, 3*, 400-424.

Pennebaker, J.W. (1989). Confession, inhibition, and disease. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (vol. 22, pp. 211-244). New York: Academic Press.

Perlow, L. & Repenning, N. (2009). The dynamics of silencing conflict. *Research in Organizational Behavior, 29,* 195-223.

Pinder, C.C. & Harlos, K.P. (2001). Employee silence: Quiescence and acquiescence as responses to perceived injustice. *Research in Personnel and Human Resources Management, 20*, 331-369.

Qin, X., DiRenzo, M., Xu, M., & Duan, Y. (2014). When do emotionally exhausted employees speak up? Exploring the curvilinear relationship between emotional exhaustion and voice. *Journal of Organizational Behavior, 35*, 1018-1041.

Satorra, A. & Bentler, P.M. (2010). Ensuring positiveness of the scaled difference chi-square test statistic. *Psychometrika, 75,* 243-248.

Schermelleh-Engel, K., Moosbrugger, H., & Müller, H. (2013). Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. *Methods of Psychological Research Online, 8*, 23-74.

Seligman, M.E. (1972). Learned helplessness. *Annual Review of Medicine, 23,* 407-412.

Sonnentag, S. & Bayer, U.V. (2005). Switching off mentally: Predictors and

consequences of psychological detachment from work during off-job time. *Journal of Occupational Health Psychology, 10*, 393-414.

Steiger, J. H. (1990). Structural model evaluation and modification: An interval estimation approach. *Multivariate Behavioral Research, 25*, 173-180.

Strasser, G. & Titus, W. (1985). Pooling of unshared information in group decision making: Biased information sampling during discussion. *Journal of Personality and Social Psychology, 48*, 1467-1478.

Weigelt, O., Syrek, C.J., Schmitt, C.J., & Urbach, T. (2018). Finding peace of mind when there still is so much left undone - A diary study on how job stress, competence need satisfaction, and proactive work behavior contribute to work-related rumination during the weekend. *Journal of Occupational Health Psychology, online first*.

Taris, T. W. (2006). Is there a relationship between burnout and objective performance? A critical review of 16 studies. *Work & Stress, 20*, 316-334.

Tannen, D. (1985). Silence: Anything but. In D. Tannen & M. Saville-Troike (Eds.). *Perspectives on silence.* (pp. 93-111). Norwood, N.J.: Ablex.

Tannen, D. & Saville-Troike, M. (1985). *Perspectives on silence.* Norwood, N.J.: Ablex.

Umphress, E.E. & Bingham, J.B. (2011). When employees do bad things for good reasons: Examining unethical pro-organizational behaviors. *Organization Science, 26*, 621–640.

Uysal, A., Lin, H.L., & Knee, C.R. (2010). The role of need satisfaction in self concealment and wellbeing. *Personality and Social Psychology Bulletin, 36*, 187-199.

Van Dick, R., Grojean, M. W., Christ, O. & Wieseke, J. (2006). Identity and the extra mile: Relationships between organizational identification and organizational citizenship behaviour. *British Journal of Management*, *17*, 283-301.

Van Dyne, L., Ang, S., & Botero, I.C. (2003). Conceptualizing employee silence and employee voice as multidimensional constructs. *Journal of Management Studies, 40*, 1359-1392.

Van Dyne, L., Cummings, L. L., & McLean Parks, J. (1995). Extra-role behaviors: In pursuit of construct and definitional clarity (a bridge over muddied waters). In L. L. Cummings & B. M. Staw (Eds.), *Research in organizational behaviour* (Vol. 17, pp. 215–285). Greenwich, CT: JAI Press.

Wang, A.-C., Hsieh, H.-H., Tsai, C.-Y., & Cheng, B.-S. (2012). Does value congruence lead to voice? Cooperative voice and cooperative silence under team and differentiated transformational leadership. *Management & Organization Review, 8,* 341-370.

Wegner, D.M. (1992). You can't always think what you want: Problems in the suppression of unwanted thoughts. In M. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 25, pp. 193-225). San Diego, CA: Academic Press.

Weir, K. F. & Jose, P. E. (2010). The perception of "false self" scale for adolescents: reliability, validity, and longitudinal relationships with depressive and anxious symptoms. *British Journal of Developmental Psychology, 28*, 393-411.

Welch, J. (2005). *Winning.* New York: HarperCollins.

Whiteside, D.B. & Barclay, L.J. (2013). Echoes of silence: Employee silence as a mediator between overall justice and employee outcomes. *Journal of Business Ethics, 116*, 251-266.

Winnicott, D.W. (1960). Ego distortion in terms of true and false self. In D.W. Winnicot (1987), *The maturational processes and the facilitating environment: Studies in the theory of emotional development* (pp. 139-152). Madison, CT: International Universities Press.

Wright, T. A. & Cropanzano, R. (1998). Emotional exhaustion as a predictor of job performance and voluntary turnover. *Journal of Applied Psychology, 83*, 486-493.

Table 1
Silence and Burnout Means and Standard Deviations, with MANOVA Results from Tests of Mean Differences across Four Measurement Occasions

	Time 1		Time 2		Time 3		Time 4		Repeated Measures MANOVA[a]	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F (df)*	*p*
Silence Type										
Acquiescent	3.77	1.92	3.65	1.91	3.79	1.94	3.59	1.96	1.021 *(3, 145)*	.385
Quiescent	3.32	1.75	3.38	1.75	3.34	1.72	3.22	1.75	2.290 *(3, 145)*	.081
Prosocial	3.80	1.53	3.87	1.56	3.78	1.57	3.68	1.55	0.130 *(3, 145)*	.942
Opportunistic	2.14	1.09	2.13	1.12	2.17	1.20	1.99	1.03	2.322 *(3, 145)*	.078
Burnout Component										
Depersonalization	2.10	0.78	2.13	0.81	2.13	0.79	2.11	0.81	1.515 *(3, 148)*	.213
Emotional Exhaustion	2.73	0.83	2.79	0.84	2.78	0.84	2.72	0.85	1.339 *(3, 148)*	.264
Personal Accomplishments	4.54	0.69	4.57	0.69	4.61	0.72	4.60	0.65	0.605 *(3, 148)*	.613

Note. The reported means and standard deviations are based on all available data for a given time point, however, the repeated measures MANOVA analyses were performed on only those participants who had values for all four measurement occasions. *N*'s for Time 1 means ranged from 601 to 603; *N*'s for Time 2 means ranged from 395 to 398; *N*'s for Time 3 means ranged from 321 to 324; *N*'s for Time 4 means ranged from 187 to 189.

Table 2

Raw Score Correlation Matrix for Focal Study Variables at Four Measurement Occasions (Cronbach's Alpha on Diagonal)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Time1 Measures														
1 Acquiescent Silence	*.90*													
2 Quiescent Silence	.54	*.89*												
3 Prosocial Silence	.24	.41	*.84*											
4 Opportunistic Silence	.38	.46	.33	*.67*										
5 Depersonalization	.40	.35	.16	.41	*.70*									
6 Emotional Exhaustion	.38	.34	.18	.26	.46	*.77*								
7 Reduced Personal Accomplishments	.36	.29	.03	.24	.41	.47	*.69*							
Time 2 Measures														
8 Acquiescent Silence	.61	.36	.20	.30	.39	.39	.40	*.91*						
9 Quiescent Silence	.38	.63	.21	.35	.29	.26	.29	.61	*.90*					
10 Prosocial Silence	.20	.22	.46	.11	.07	.10	.09	.34	.40	*.88*				
11 Opportunistic Silence	.28	.28	.16	.59	.24	.15	.24	.41	.47	.29	*.73*			
12 Depersonalization	.35	.33	.08	.34	.71	.39	.40	.47	.37	.11	.36	*.74*		
13 Emotional Exhaustion	.31	.32	.11	.23	.40	.71	.43	.47	.38	.14	.22	.53	*.78*	
14 Reduced Personal Accomplishments	.34	.26	-.01	.25	.35	.42	.71	.42	.34	.08	.26	.43	.48	*.71*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Time 3 Measures														
15 Acquiescent Silence	.56	.35	.15	.27	.41	.31	.41	.69	.47	.28	.37	.49	.37	.38
16 Quiescent Silence	.43	.59	.21	.30	.34	.34	.37	.47	.68	.25	.40	.42	.37	.34
17 Prosocial Silence	.20	.10	.34	.13	.15	.22	.13	.29	.17	.48	.26	.21	.18	.12
18 Opportunistic Silence	.28	.28	.11	.59	.30	.24	.33	.31	.38	.17	.68	.39	.23	.29
19 Depersonalization	.32	.31	.14	.31	.74	.41	.45	.44	.37	.17	.29	.76	.45	.43
20 Emotional Exhaustion	.24	.27	.10	.22	.37	.64	.42	.36	.32	.12	.16	.40	.72	.45
21 Reduced Personal Accomplishments	.29	.23	.05	.22	.31	.43	.71	.37	.28	.06	.24	.39	.49	.73
Time 4 Measures														
22 Acquiescent Silence	.64	.35	.03	.16	.31	.32	.44	.66	.46	.18	.29	.39	.36	.41
23 Quiescent Silence	.27	.56	.17	.18	.33	.28	.40	.43	.70	.24	.26	.26	.31	.35
24 Prosocial Silence	.20	.19	.35	.09	.14	.23	.17	.28	.25	.48	.19	.17	.23	.18
25 Opportunistic Silence	.25	.24	.06	.48	.26	.24	.33	.27	.28	.15	.51	.32	.22	.25
26 Depersonalization	.32	.31	.09	.29	.62	.43	.41	.43	.46	.12	.32	.69	.45	.38
27 Emotional Exhaustion	.22	.26	.01	.13	.28	.60	.40	.31	.37	.03	.20	.35	.65	.39
28 Reduced Personal Accomplishments	.25	.20	.07	.18	.28	.35	.68	.30	.27	.00	.25	.38	.42	.69

	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Time 3 Measures														
15 Acquiescent Silence	*.93*													
16 Quiescent Silence	.59	*.90*												
17 Prosocial Silence	.32	.34	*.88*											
18 Opportunistic Silence	.40	.45	.27	*.77*										
19 Depersonalization	.48	.39	.22	.37	*.73*									
20 Emotional Exhaustion	.33	.34	.19	.20	.46	*.78*								
21 Reduced Personal Accomplishments	.40	.35	.11	.27	.44	.51	*.71*							
Time 4 Measures														
22 Acquiescent Silence	.74	.51	.24	.26	.42	.30	.39	*.93*						
23 Quiescent Silence	.42	.68	.15	.27	.37	.28	.32	.53	*.90*					
24 Prosocial Silence	.27	.25	.61	.13	.26	.18	.22	.36	.39	*.86*				
25 Opportunistic Silence	.29	.22	.15	.54	.28	.08	.34	.36	.42	.25	*.69*			
26 Depersonalization	.44	.36	.18	.36	.75	.43	.38	.42	.37	.22	.37	*.76*		
27 Emotional Exhaustion	.32	.26	.07	.20	.39	.68	.44	.35	.28	.18	.14	.52	*.79*	
28 Reduced Personal Accomplishments	.28	.20	.07	.16	.38	.32	.74	.36	.27	.20	.26	.47	.45	*.69*

Note. t1: N = 599-603. Correlations of .10 or higher are significant at $p < .05$. t2: N = 386 - 398. Correlations of .10 or higher are significant at $p < .01$. t3: N = 295 - 313. Correlations of .12 or higher are significant at $p < .01$. t4: N = 169-178. Correlations of .15 or higher are significant at $p < .05$.

Table 3

Tests of Measurement Invariance across Four Measurement Occasions for Silence and Burnout Latent Variables

							Nested Model Comparison		
Model	*χ2*	*df*	*p*	*RMSEA 90%CI*	*CFI*	*SRMR*	*S-B Δχ2*	*Δdf*	*Δp*
M1: No equality constraints	11,165.695	6002	<.0001	.037 [.036, .038]	.819	.088			
M2: Factor loadings invariant	11,209.315	6068	<.0001	.037 [.036, .038]	.820	.089			
M3: Factor loadings & intercepts Invariant	11,284.897	6134	<.0001	.037 [.036, .038]	.819	.089			
M4: Factor loadings, intercepts, variances across time, & within-occasion covariances invariant across time	11,378.211	6232	<.0001	.03 [.035, .037]	.819	.091			
Nested Model Comparisons									
M1 v M2							49.526	66	.9351
M2 v M3							74.287	66	.2264
M3 v M4							102.849	98	.3489
M1 v M4							225.987	230	.5623

Note. Because a robust estimator (MLR) was used, the Satorra-Bentler (2010) correction was used in the calculation of the chi-square

difference statistic. Non-significant results for the nested model comparisons (i.e., $\Delta p > .05$) indicate that the more constrained model does not have a significantly worse fit, leading to an acceptance of the invariance constraints associated with that model.

Table 4

Mean Estimated Stability Coefficients for Silence and Burnout Variables (Cumulated over Models)

	Unstandardized Coefficients			Standardized Coefficients		
Variable	*M*	*SD*	Range	*M*	*SD*	Range
Silence Dimensions						
Acquiescent	.64	.03	.61-.67	.64	.04	.58-.70
Quiescent	.69	.02	.67-.71	.70	.02	.68-.72
Prosocial	.53	.00	.52-.53	.54	.05	.49-.60
Opportunistic	.67	.03	.65-.70	.66	.02	.63-.69
Burnout Components						
Depersonalization	.87	.01	.86-.88	.84	.05	.75-.91
Emotional Exhaustion	.73	.01	.72-.74	.72	.03	.69-.76
Personal Accomplishments	.89	.01	.88-.90	.89	.01	.87-.91

Note. Values in this table are from a set of 12 models (4 silence types combined with 3 burnout components). *Unstandardized coefficient values for each silence variable* come from a single, equality-constrained estimate from each of the 3 relevant models (e.g., acquiescent silence with each of the three burnout components etc.). Because they vary due to unequal variance estimates across time periods, *standardized coefficients for silence variables* are based on 9 estimates (e.g., 3 models x 3 time lags). Similarly, *unstandardized coefficients for burnout variables* are based on 4 estimates (e.g., depersonalization with each of the four silence types, etc.) and *standardized coefficients for burnout variables* are based on 12 estimates. All estimates are statistically significant at $p < .001$.

Table 5
Relationship of Silence Dimensions to Burnout Components: Path Coefficients Averaged across Relevant Models

Outcome variable Causal variable	*B*	*se*	*p*	*β*
DV = Depersonalization				
Acquiescent	.015*	.007	.045	.054
Quiescent	.015*	.008	.042	.051
Prosocial	.009	.007	.210	.028
Opportunistic	.035	.022	.112	.046
DV = Emotional Exhaustion				
Acquiescent	.042*	.018	.018	.071
Quiescent	.057*	.019	.002	.088
Prosocial	.020	.017	.239	.029
Opportunistic	.051	.047	.273	.031
DV = Reduced Personal Accomplishment				
Acquiescent	.012	.011	.270	.034
Quiescent	.001	.011	.960	.001
Prosocial	.006	.010	.586	.013
Opportunistic	.033	.031	.296	.030
Reverse Causal Relationships				
DV = Acquiescent Silence				
Depersonalization	.718*	.140	<.001	.194
Emotional exhaustion	.229*	.052	<.001	.133
Red. Personal Accomplishment	.643*	.116	<.001	.230
DV = Quiescent Silence				
Depersonalization	.386*	.108	<.001	.114
Emotional exhaustion	.101*	.045	.024	.065
Red. Personal Accomplishment	.381*	.092	<.001	.155
DV = Prosocial Silence				
Depersonalization	.292*	.107	.006	.090
Emotional exhaustion	.129*	.047	.007	.090
Red. Personal Accomplishment	.290*	.088	.001	.132
DV = Opportunistic Silence				
Depersonalization	.140*	.043	.001	.102
Emotional exhaustion	.002	.016	.899	.003
Red. Personal Accomplishment	.145*	.031	<.001	.154

Note. B = unstandardized path coefficient (equality constrained across 3 time periods); *se* = standard error for unstandardized coefficient; *β* = standardized path coefficient, averaged across

3 time periods. Significance tests are based on unstandardized coefficients.

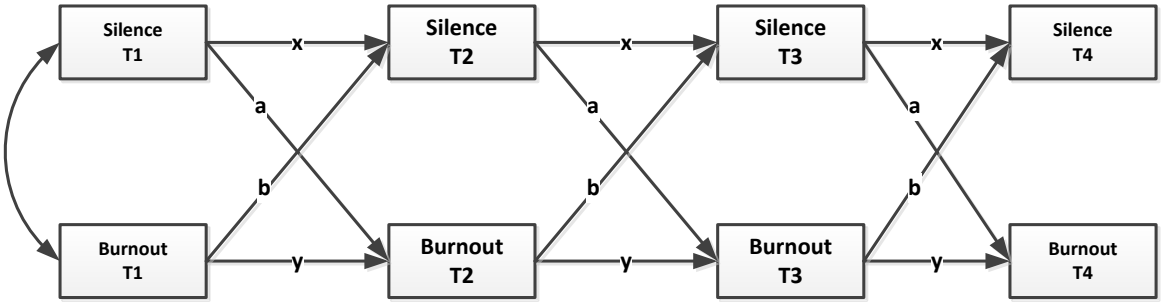

Figure 1. General form of longitudinal silence-burnout auto-regressive cross-lagged model. Paths x and y estimate stability coefficients. Paths labelled 'a' are effects in the direction consistent with Hypotheses 1-3. Paths labelled 'b' are effects in the direction consistent with Hypotheses 4-6. This model was estimated for all possible pairings of the four silence types with the three burnout components. Within an estimation, all paths labelled with the same letter were constrained equal.